

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously Presented) A method of shaping input packet traffic to form output packet traffic, said method comprising steps of:

specifying a probability parameter representing, in regard to a downstream buffer receiving said output packet traffic, the slope in the upper bound of (i) probability of buffer occupancy of the downstream buffer being exceeded versus (ii) buffer occupancy of the downstream buffer;

specifying a rate parameter representing the mean rate of the output packet traffic, wherein the rate parameter and the probability parameter satisfy a relationship imposing a predetermined probabilistic limit on burstiness of the output packet traffic; and

constraining, based upon the probability parameter and the rate parameter, transmission of the input packet traffic, thereby to produce said output packet traffic.

2-7. (Cancelled)

8. (Previously Presented) A packet traffic shaper for producing output packet traffic, the shaper comprising:

means for specifying a probability parameter representing, in regard to a downstream buffer receiving said output packet traffic, the slope in the upper bound of (i) probability of buffer occupancy of the downstream buffer being exceeded versus (ii) buffer occupancy of the downstream buffer;

means for specifying a rate parameter representing the mean rate of the output packet traffic, wherein the rate parameter and the probability parameter satisfy a relationship imposing a predetermined probabilistic limit on burstiness of the output packet traffic; and

constraining means configured to constrain, based upon the probability parameter and the rate parameter, transmission of traffic input to said shaper, thereby to produce said output packet traffic.

9-14. (Cancelled)

15. (Previously Presented) A computer readable memory medium for storing a program for an apparatus which shapes input packet traffic to form output packet traffic, said program comprising:

code for a specifying step for specifying a probability parameter representing, in regard to a downstream buffer receiving said output packet traffic, the slope in the upper bound of (i) probability of buffer occupancy of the downstream buffer being exceeded versus (ii) buffer occupancy of the downstream buffer;

code for a specifying step for specifying a rate parameter representing the mean rate of the output packet traffic, wherein the rate parameter and the probability parameter satisfy a relationship imposing a predetermined probabilistic limit on burstiness of the output packet traffic; and

code for a constraining step for constraining, based upon said probability parameter and the rate parameter, transmission of the input packet traffic, thereby to produce said output packet traffic.

16-28. (Cancelled)

29. (Previously Presented) A method of policing input packet traffic to form output packet traffic, said method comprising steps of:

specifying a probability parameter representing, in regard to a downstream buffer receiving said output packet traffic, the slope in the upper bound of (i) probability of buffer occupancy of the downstream buffer being exceeded versus (ii) buffer occupancy of the downstream buffer;

specifying a rate parameter representing the mean rate of the output packet traffic, wherein the rate parameter and the probability parameter satisfy a relationship imposing a predetermined probabilistic limit on burstiness of the output packet traffic; and

tagging, based upon said probability parameter and the rate parameter, conforming packets in the input packet traffic, thereby to produce said output packet traffic wherein tagged packets comprise a policed traffic stream.

30-35. (Cancelled)

36. (Previously Presented) A packet traffic policer for policing input packet traffic and producing policed output packet traffic, the policer comprising:

specifying means for specifying a probability parameter representing, in regard to a downstream buffer receiving said output packet traffic, the slope in the upper bound of (i) probability of buffer occupancy of the downstream buffer being exceeded versus (ii) buffer occupancy of the downstream buffer;

specifying means for specifying a rate parameter representing the mean rate of the output packet traffic, wherein the rate parameter and the probability parameter satisfy a relationship imposing a predetermined probabilistic limit on burstiness of the output packet traffic; and

tagging means configured to tag, based upon the probability parameter and the rate parameter, conforming packets in traffic input to said policer, thereby to produce said output traffic wherein tagged packets comprise a policed traffic stream.

37-42. (Cancelled)

43. (Previously Presented) A computer readable memory medium for storing a program for an apparatus which polices input packet traffic to produce policed output packet traffic, said program comprising:

code for a specifying step for specifying a probability parameter representing, in regard to a downstream buffer receiving said output packet traffic, the slope in the upper bound of (i) probability of buffer occupancy of the downstream buffer being exceeded versus (ii) buffer occupancy of the downstream buffer;

code for a specifying step for specifying a rate parameter representing the mean rate of the output packet traffic, wherein the rate parameter and the probability parameter satisfy a relationship imposing a predetermined probabilistic limit on burstiness of the output packet traffic; and

code for a tagging step for tagging, based upon said probability parameter and the rate parameter, conforming packets in the input packet traffic, thereby to produce said output packet traffic wherein tagged packets comprise a policed traffic stream.

44-56. (Cancelled)

57. (Original) A method of controlling admission of a proposed additional input packet traffic stream to a network node, said node having a prior input packet traffic stream, and an output packet traffic stream carried on a link having an associated maximum bandwidth, said method comprising steps of:

shaping the prior input packet traffic stream to have a corresponding pre-determined entropy bound if said prior stream does not have said corresponding pre-determined entropy bound;

shaping the proposed additional input packet traffic stream to have a corresponding pre-determined entropy bound if said proposed stream does not have said corresponding pre-determined entropy bound;

determining corresponding equivalent bandwidths for the prior traffic stream and the proposed additional traffic stream; and

admitting the proposed additional traffic stream if a sum of the corresponding equivalent bandwidths of the prior traffic stream and the proposed additional traffic stream does not exceed said maximum bandwidth.

58. (Original) A connection admission controller configured to control admission of a proposed additional input packet traffic stream to a network node, said node having a prior input packet traffic stream, and an output packet traffic stream carried on a link having an associated maximum bandwidth, said controller comprising:

first shaping means configured to shape the prior input packet traffic stream to have a corresponding pre-determined entropy bound if said prior stream does not have said corresponding pre-determined entropy bound;

second shaping means configured to shape the proposed additional input packet traffic stream to have a corresponding pre-determined entropy bound if said proposed stream does not have said corresponding pre-determined entropy bound;

determining means configured to determine corresponding equivalent bandwidths for the prior traffic stream and the proposed additional traffic stream; and

admission means configured to admit the proposed additional traffic stream if a sum of the corresponding equivalent bandwidths of the prior traffic stream and the proposed additional traffic stream does not exceed said maximum bandwidth.

59. (Original) A computer readable memory medium for storing a program for an apparatus which controls admission of a proposed additional input packet traffic stream to a

network node, said node having a prior input packet traffic stream, and an output packet traffic stream carried on a link having an associated maximum bandwidth, said program comprising:

code for a first shaping step for shaping the prior input packet traffic stream to have a corresponding pre-determined entropy bound if said prior stream does not have said corresponding pre-determined entropy bound;

code for a second shaping step for shaping the proposed additional input packet traffic stream to have a corresponding pre-determined entropy bound if said proposed stream does not have said corresponding pre-determined entropy bound;

code for a determining step for determining corresponding equivalent bandwidths for the prior traffic stream and the proposed additional traffic stream; and

code for an admitting step for admitting the proposed additional traffic stream if a sum of the corresponding equivalent bandwidths of the prior traffic stream and the proposed additional traffic stream does not exceed said maximum bandwidth.

60-72. (Cancelled)

73. (Currently Amended) ~~A—The~~ method according to claim 1, wherein the predetermined probabilistic limit imposed by the relationship satisfied by the rate parameter and the probability parameter is exponential bounded burstiness.

74. (Currently Amended) ~~A—The~~ method according to claim 1, wherein the relationship imposing the probabilistic limit on burstiness has the following mathematical representation:

$$\Pr\{O(t) - O(s) \leq (t - s)\rho + f(\alpha, x)\} \leq F(\alpha, \sigma); \text{ for all times } s(0 \leq s \leq t);$$

where:

Pr is the probability operator;

$O(t)$ is the number of bits in the output packet traffic in the time interval $[0, t]$;

ρ is the rate parameter;

α is the probability parameter;

x is a uniform random variate $x(0 \leq x \leq 1)$;

F is a distribution function involving parameters α and σ .

f is the inverse function of F ; and

σ is the size of a given burst.

75. (Currently Amended) ~~A-~~The method according to claim 74, where the functions F and f have the following mathematical representations:

$$F(\alpha, \sigma) = 1 - e^{-\alpha\sigma};$$

$f(\alpha, x) = (1/\alpha) \log [1-x]^{-1}$; and the relationship imposing the probabilistic limit on burstiness has the following mathematical representation:

$$\Pr\{O(t) - O(s) \geq (t - s)\rho + \sigma\} \leq e^{-\alpha\sigma};$$

in which case the probabilistic limit imposed by the relationship satisfied by the rate parameter and the probability parameter is exponential bounded burstiness.

76. (Currently Amended) ~~A-~~The packet traffic shaper according to claim 8, wherein the predetermined probabilistic limit imposed by the relationship satisfied by the rate parameter and the probability parameter is exponential bounded burstiness.

77. (Currently Amended) ~~A-~~The packet traffic shaper according to claim 8, wherein the relationship imposing the probabilistic limit on burstiness has the following mathematical representation:

$$\Pr\{O(t) - O(s) \leq (t - s)\rho + f(\alpha, x)\} \leq F(\alpha, \sigma); \text{ for all times } s(0 \leq s \leq t);$$

where:

Pr is the probability operator;

$O(t)$ is the number of bits in the output packet traffic in the time interval $[0, t]$;

ρ is the rate parameter;

α is the probability parameter;

x is a uniform random variate $x(0 \leq x \leq 1)$;

F is a distribution function involving parameters α and σ .

f is the inverse function of F ; and

σ is the size of a given burst.

78. (Currently Amended) ~~A-~~The packet traffic shaper according to claim 77, where the functions F and f have the following mathematical representations:

$$F(\alpha, \sigma) = 1 - e^{-\alpha\sigma};$$

$f(\alpha, x) = (1/\alpha) \log [1-x]^{-1}$; and the relationship imposing the probabilistic limit on burstiness has the following mathematical representation:

$$\Pr\{O(t) - O(s) \geq (t - s)\rho + \sigma\} \leq e^{-\alpha\sigma};$$

in which case the probabilistic limit imposed by the relationship satisfied by the rate parameter and the probability parameter is exponential bounded burstiness.

79. (Currently Amended) ~~A-~~The computer readable memory medium according to claim 15, wherein the predetermined probabilistic limit imposed by the relationship satisfied by the rate parameter and the probability parameter is exponential bounded burstiness.

80. (Currently Amended) ~~A-~~The computer readable memory medium according to claim 15, wherein the relationship imposing the probabilistic limit on burstiness has the following mathematical representation:

$$\Pr\{O(t) - O(s) \leq (t - s)\rho + f(\alpha, x)\} \leq F(\alpha, \sigma); \text{ for all times } s(0 \leq s \leq t);$$

where:

\Pr is the probability operator;

$O(t)$ is the number of bits in the output packet traffic in the time interval $[0, t]$;

ρ is the rate parameter;

α is the probability parameter;

x is a uniform random variate $x(0 \leq x \leq 1)$;

F is a distribution function involving parameters α and σ .

f is the inverse function of F ; and

σ is the size of a given burst.

81. (Currently Amended) ~~A-~~The computer readable memory medium according to claim 80, where the functions F and f have the following mathematical representations:

$$F(\alpha, \sigma) = 1 - e^{-\alpha\sigma};$$

$f(\alpha, x) = (1/\alpha) \log [1-x]^{-1}$; and the relationship imposing the probabilistic limit on burstiness has the following mathematical representation:

$$\Pr\{O(t) - O(s) \geq (t - s)\rho + \sigma\} \leq e^{-\alpha\sigma};$$

in which case the probabilistic limit imposed by the relationship satisfied by the rate parameter and the probability parameter is exponential bounded burstiness.

82. (Currently Amended) A-The method of policing according to claim 29, wherein the predetermined probabilistic limit imposed by the relationship satisfied by the rate parameter and the probability parameter is exponential bounded burstiness.

83. (Currently Amended) A-The method of policing according to claim 29, wherein the relationship imposing the probabilistic limit on burstiness has the following mathematical representation:

$$\Pr\{O(t) - O(s) \leq (t-s)\rho + f(\alpha, x)\} \leq F(\alpha, \sigma); \text{ for all times } s(0 \leq s \leq t);$$

where:

\Pr is the probability operator;

$O(t)$ is the number of bits in the output packet traffic in the time interval $[0, t]$;

ρ is the rate parameter;

α is the probability parameter;

x is a uniform random variate $x(0 \leq x \leq 1)$;

F is a distribution function involving parameters α and σ .

f is the inverse function of F ; and

σ is the size of a given burst.

84. (Currently Amended) A-The method of policing according to claim 83, where the functions F and f have the following mathematical representations:

$$F(\alpha, \sigma) = 1 - e^{-\alpha\sigma};$$

$f(\alpha, x) = (1/\alpha) \log [1-x]^{-1}$; and the relationship imposing the probabilistic limit on burstiness has the following mathematical representation:

$$\Pr\{O(t) - O(s) \geq (t - s)\rho + \sigma\} \leq e^{-\alpha\sigma};$$

in which case the probabilistic limit imposed by the relationship satisfied by the rate parameter and the probability parameter is exponential bounded burstiness.

85. (Currently Amended) ~~A-~~The packet traffic policer according to claim 36, wherein the predetermined probabilistic limit imposed by the relationship satisfied by the rate parameter and the probability parameter is exponential bounded burstiness.

86. (Currently Amended) ~~A-~~The packet traffic policer according to claim 36, wherein the relationship imposing the probabilistic limit on burstiness has the following mathematical representation:

$$\Pr\{O(t) - O(s) \leq (t - s)\rho + f(\alpha, x)\} \leq F(\alpha, \sigma); \text{ for all times } s(0 \leq s \leq t);$$

where:

\Pr is the probability operator;

$O(t)$ is the number of bits in the output packet traffic in the time interval $[0, t]$;

ρ is the rate parameter;

α is the probability parameter;

x is a uniform random variate $x(0 \leq x \leq 1)$;

F is a distribution function involving parameters α and σ .

f is the inverse function of F ; and

σ is the size of a given burst.

87. (Currently Amended) ~~A~~The packet traffic policer according to claim 86, where the functions F and f have the following mathematical representations:

$$F(\alpha, \sigma) = 1 - e^{-\alpha\sigma};$$

$f(\alpha, x) = (1/\alpha) \log [1-x]^{-1}$; and the relationship imposing the probabilistic limit on burstiness has the following mathematical representation:

$$\Pr\{O(t) - O(s) \geq (t - s)\rho + \sigma\} \leq e^{-\alpha\sigma};$$

in which case the probabilistic limit imposed by the relationship satisfied by the rate parameter and the probability parameter is exponential bounded burstiness.

88. (Currently Amended) ~~A~~The computer readable memory medium according to claim 43, wherein the predetermined probabilistic limit imposed by the relationship satisfied by the rate parameter and the probability parameter is exponential bounded burstiness.

89. (Currently Amended) ~~A~~The computer readable memory medium according to claim 43, wherein the relationship imposing the probabilistic limit on burstiness has the following mathematical representation:

$$\Pr\{O(t) - O(s) \leq (t - s)\rho + f(\alpha, x)\} \leq F(\alpha, \sigma); \text{ for all times } s(0 \leq s \leq t);$$

where:

Pr is the probability operator;

$O(t)$ is the number of bits in the output packet traffic in the time interval $[0, t]$;

ρ is the rate parameter;

α is the probability parameter;

x is a uniform random variate $x(0 \leq x \leq 1)$;

F is a distribution function involving parameters α and σ .

f is the inverse function of F; and

σ is the size of a given burst.

90. (Currently Amended) A—The computer readable memory medium according to claim 89, where the functions F and f have the following mathematical representations:

$$F(\alpha, \sigma) = 1 - e^{-\alpha\sigma};$$

$f(\alpha, x) = (1/\alpha) \log [1-x]^{-1}$; and the relationship imposing the probabilistic limit on burstiness has the following mathematical representation:

$$\Pr\{O(t) - O(s) \geq (t - s)\rho + \sigma\} \leq e^{-\alpha\sigma};$$

in which case the probabilistic limit imposed by the relationship satisfied by the rate parameter and the probability parameter is exponential bounded burstiness.